The trace of First World War on mathematics in Brno

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March 25, 2009

Abstract : In the present paper, we study the evolution of the mathematical community in Brno (Brünn in German), the Moravian maintown, in the years between 1900 and 1930. In particular, we want to discuss how the Great War and its consequences (creation of Czechoslovakia and shift of power from the Germans to the Czechs) had an effect on this evolution.

Key-words : History of mathematics, scientific politics, international links, First World War.

AMS Classification : 01A60; 01A72; 01A80

Introduction

The foundation of Czechoslovakia in 1918 appears a good example of an attempt of reorganization of Europe after the end of World War I. In places where there was a tense cohabitation of several national communities (as in many parts of the collapsed Austro-Hungarian empire), it was necessary to choose a form of organization allowing the coexistence of several traditions. This was in particular the case with the organization of educational system.

Brno (Brünn in German)[1], the capital of the Moravia district was such a place of cohabitation and appears therefore as a good laboratory to understand the kind of ruptures and continuities in history around WW1. Moravia is a border region of Austria, and therefore has always been a crossroads of cultures. Due to the presence of a very strong German minority, Moravia was in 1918 one of the parts of Europe where the question of nationalities would appear with particular acuteness. The father of Czechoslovakian independence, Tomáš

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[1]To simplify, we shall always use the Czech name of the city when referring to it, though, when the context indicates that the German community is concerned, it obviously must be replaced by Brünn.

G.Masaryk wrote in *New Europe* that in the *so-called 'German territories' in Bohemia (Moravia and Silesia) live numerous Czechs; it is therefore fair that the Czech state will keep them; it would be unfair to sacrifice hundreds thousand Czechs to the* furor teutonicus[2]. This peremptory assertion hardly dissimulated that one may expect serious problems from this ambiguous annexation, an impression confirmed by Beneš's declarations. Beneš, the minister of foreign affairs of the new Czechoslovakia, came to Paris on 5 February 1919 in order to explain the proposed drawing of borders of the new state to the delegates preparing the Peace conference. He mentioned that *the relations of Czechoslovakia with its neighbours have to be settled in order to avoid any conflict.* To achieve this goal Beneš found *necessary to take the ethnographic map into consideration with maximal care, above all in regions where natural borders are not obvious*[3].

To understand the case of Brno, it is therefore vital to understand how the difficult contacts between the Czech majority and the large German minority had influenced the whole process of edification of the education institutions between ca 1880 and 1930. Though the German minority lost its domination in 1918, the institutions were still much influenced by the culture that had prevailed before the war, though there were several attempts to create a new interest towards the countries of the victorious side.

And hence an intricate question (maybe the most difficult one of the present paper) immediately arises in what we are now writing. Namely : who are, in this story, the Germans, who are the Czechs? What makes the question hard is that the answer was not univocal and was changing during the period depending on political and social conditions. Křen has devoted a study[4] to the special case of the 'Germans' which reveals how the definition of who was German (and therefore who was Czech) fluctuated. In the population censuses of the years 1880-1900, the numbers of inhabitants of Brno who declared to have Czech as their language of communication, varied from 30 to 40 percent. In the last census before WW1 (1910), 41.000 out of 126.000 Brno inhabitants (32%) declared Czech to be their usual language[5]. These figures must be considered with care. Political and economical reasons probably lead to an overestimation of the German settlement because in January 1919, 61% of the (almost identical) inhabitants declared to belong to the Czech community.

Our study emphasizes the fact that may seem obvious at first glance. The history of mathematics, and more widely the history of intellectual life in Moravia cannot avoid taking into account the question of relationship between the two national communities of German inhabitants on the one hand, and Czech inhabitants on the other hand, even if the contours of these communities were never very precise. These complicated contacts, mixing rivalry (often) and dia-

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[2]Masaryk, T. G. : Nová Evropa. Stanovisko slovanské. (New Europe. A slavonic point of view), Dubský, Praha, 1920.

[3]Quoted in the newspaper Le Matin, 6 February 1919.

[4]Křen, J. : Changes in identity. Germans in Bohemia and Moravia in the nineteenth and twentieth centuries. In Bohemia in History (Mikuláš Teich, ed.), Cambridge University Press, 1998.

[5]Dřímal, J., Peša, V. : Dějiny města Brna, vol. 2. Blok, Brno 1973. p. 64.

logue (sometimes) appear as a basic riddle by means of which one can explain much of the history of academic life in the Czech lands during two centuries. To understand the situation of 1918, it is, however, necessary to consider this question with care and to overcome the impressions created by our knowledge of the violent end of this cohabitation. The German invasion of 1939 followed by the terrible years of occupation, and the general expulsion of German inhabitants between 1946 and 1948 might lead us to imagine the presence of the two communities as a permanent battlefield. In fact, it rather seems that the members of both communities had mostly ignored each other before 1918 - and hence passively accepted living in the Habsburg monarchy for granted. As Fejtö mentions, *it would be projecting oneself abusively in the past to believe that, even at this moment [in 1916, at the death of emperor Franz-Josef], the majority of Czechs were ready to get rid of the monarchy*[6]. We, therefore, think that the mentioned riddle is appropriate to describe not only the splits, but also the continuities in academic life.

1 The Czech fight for higher education in Moravia before WW1

The first real university in Brno, a Technical University (*Technische Hochschule*) was founded in Brno in 1873, replacing the Polytechnicum established in 1849, itself a distant heir of the old Olomouc Academy. The Technical University was divided into 'faculties' and was managed by an elected rector. Though the number of professors increased, the number of students stagnated and the Brno Technical University was, in fact, a small institution[7]. Numerous Austrian technicians and scientists began their academic career in modest size institutions. Havránek[8] quotes the epigrammatic characterization of the professor's career in the Habsburg monarchy : *Sentenced to Czernowitz, pardoned to Graz, promoted to Vienna*. Though less prestigious than Graz because of the 'hostile' Czech environment, the Brno Technical University was certainly seen as a reasonable position because of its proximity to Vienna. Such a position was considered a springboard for accessing one of the Vienna universities.

Since the beginning of the Czech national revival (i. e. the end of the 18th century), the 'war' between the communities had been waged mainly on a symbolic ground, namely in cultural and intellectual life. The intellectual conflict between the Germans and Czechs existed obviously in every place where the two communities cohabited. It is worth noticing that there was a noticeable difference between the situation in Bohemia and in Moravia.

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[6] Fejtö, F. : Requiem pour un Empire défunt. Histoire de la destruction de l'Autriche-Hongrie, Points-Histoire, Seuil, 1993. p.141.

[7] Hellmer, K. : Geschichte der Deutschen Technischen Hochschule in Brünn. In Festschrift der k. k. Technischen Hochschule in Brünn zur Feier ihres fünfzigjährigen Bestehens und der Vollendung des Erweiterungsbaues im October 1899. Brünn 1899.

[8] Havránek, J. : The university professors and students in nineteenth-century Bohemia. In Bohemia in History (Mikuláš Teich, ed.), Cambridge University Press, 1998.

In Prague, due to the large numerical domination of the Czech community, the Germans often live the cohabitation as a threat. The division of the Prague university in 1882 into German and Czech Universities was seen by the Germans as a necessity to preserve German high education in Prague. The conflicts in Prague were often violent. An example is the creation of the movement *Los von Prag* (Free or Out from Prague), where Germans from northern and western Bohemia, resenting Prague's anachronistic liberalism, attempted to move the cultural and ideological centers of German Bohemia to Reichenberg (Liberec). In 1897 German students attempted to move German universities from Prague to Liberec[9]. Many testimonies exaggerating these tensions at the beginning of 20th century can be found in the intellectual life. A famous example is given by the celebrated Hašek's book *The good soldier Śvejk*[10] where the Austrian militarism and bureaucracy is ridiculed. On the academic ground, we find a harsh dialogue between two personalities of Prague intellectual life, the rector of the (German) Charles University A.Sauer and the politically involved Czech physician O.Srdínko. In 1907, mocking the complaints of the Prague Czech University members to obtain better financial subsidies, the rector Sauer called the latter institution a *spoiled child*, bringing Srdínko's wrath on him in a small brochure published in 1908[11].

The already mentioned geographic situation of south-Moravia on the border of cultures and languages created a different mode of cohabitation. In Brno, the Germans, though not in the majority, formed a strong community. So close to the imperial maintown, they were in position to keep a tight control on the evolution of the situation. The division of the Prague University had resulted in an increased capacity at both universities. The Czechs from Moravia went to the Czech Universities in Prague; the Germans mostly studied in Vienna. At the end of the 1880s, about 1000 students from Moravia studied in Austrian universities (700 in Vienna, 250 at the Czech University in Prague and 60 at the German University in Prague). In the middle of the 1890s, the number of students from Moravia increased to 1300. The question of creating a new university in Moravia, therefore, reappeared. Moreover, the existence of tiny universities in the Habsburg monarchy in places where the students potential was much smaller, such as the university in Czernowitz in distant Bukovina which had less than 300 students, was seen as a proof for the soundness of the project[12].

The central problem was the teaching language. 5 million Czechs had only one university in Prague, whereas 8 million Germans had 5 Universities (Vienna, Prague, Graz, Innsbruck, and Czernowitz). The Czechs from Moravia and Silesia formed a large group among the university students in Austria. In

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[9]See Gary B. Cohen: The Politics of Ethnic Survival: Germans in Prague, 1861-1914, Purdue University Press, 2006.

[10]Hašek, J. : The Good Soldier Schweik, tr. Paul Selver, Boni, New-York, 1930.

[11]Srdínko, O. : Zhýčkaná česká universita. Odpověď prof. Dr. A. Sauerovi, rektoru (1907–8) německé university v Praze. (The spoiled Czech University. An answer to Prof. A.Sauer, rector of the German University in Prague), Nákladem vlastním, Praha, 1908.

[12]Jordán, F. : Dějiny university v Brně. Universita J. E. Purkyně v Brně. Brno 1969. pp. 40, 43.

1885, Masaryk mentioned the necessity for the Czech nation to require two universities for the first time[13]. He wrote later that this was necessary in order to guarantee a wealthy competition and new places for young teachers[14].

Masaryk brought the following reasoning to support his request. If a young specialist were appointed to the only university of the Czech lands, in the next decades, no other talented young man had any chance to obtain a professorship at university. As a confirmation, at the end of 1890s, a high number of privat-docents at the Czech University in Prague resulted in an academic jamming to be solved. The Vienna government adopted a wait-and-see policy. Already in 1896, the minister Gautsch conceded a right of Moravia for a Czech university and a Czech technical university, but it remained a formal declaration as Vienna asked for a preliminary agreement about the creation of a new university from the national components[15].

In 1899, a Czech Technical University was opened in Brno as a counterpart of the German Technical University but the foundation of a Czech university was opposed to. The German politicians and intelligentsia in the Czech lands warned against its establishing. They emphasized that a Czech university would not be in position to prepare the first rate specialists because the Czech language limited contacts with the world leading scientists[16]. But they also expressed their fear of a forced 'czechisation', sometimes in harsh terms. A. Sauer wrote in 1907 : *And the students of the university of Brünn, objects of every wish, where are they going to find employment, if it is not by occupying those that, until today, have been in the hands of representatives of other races [sic] , and above all of the Germans? [...] If czechisation means expelling the Germans from their positions, dominating the Germans, oppressing the Germans, then this proud slogan must not ornate the pediment of a second Czech university without our deepest protesting against this villainy*[17]. Moreover, Sauer mentioned that a major part of the taxes were paid by the (richer) German community who would be therefore reluctant to finance a second Czech university. This remark made Srdínko explode : *He who wants to make an object of trade with civilization and to offer it only to the rich, behaves himself as a barbarian, even if he is endowed with the dignity of a university rector*[18].

In 1905, Masaryk talked again about the necessity of a second university for improving the quality of the first University. He wrote moreover that the second Czech university had to be in Brno[19]. The year 1905 was the top of the efforts to establish a Czech university in Brno. Yet, after 1908 no Czech political party kept it in its political program, though Masaryk presented a

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[13]Masaryk, T. G. : Jak zvelebovati naši literaturu naukovou, Athenaeum II, 1885, p. 275.

[14]Masaryk, T. G. : Druhá universita, Naše doba, I, 1894, pp. 672–676.

[15]Jordán, F. : Dějiny university v Brně. Universita J. E. Purkyně v Brně. Brno 1969. pp. 47–48.

[16]Bachmann, A. : Die Universitäten im österreichischen Völkerstreite. Neue Freie Presse, 1st November 1902.

[17] A.Sauer. Quoted by O.Srdínko, op. cit.

[18]Srdínko, O., op.cit.

[19]Lidové Noviny, 28 June 1905.

series of petitions[20] for the creation of a new Czech university at the Austrian Parliament in June 1912. All facts considered, due to the political situation in Brno and the tergiversations of Vienna government, the attempts for its creation resulted in a failure.

2 Mathematics in Brno at the eve of WW1

Let us now draw the picture of mathematics in higher education in Brno at the eve of WW1 (between 1880 and 1914). The comparison with the picture of the post-war situation described in the subsequent section should emphasize the continuities and the splits in the local mathematics between the two periods. We shall successively consider the case of the German and of the Czech institutions.

2.1 German institutions

At the German Technical University, the chairs (*Lehrstuhls*) of mathematics, of descriptive geometry, and of theoretical mechanics met a more frequent the turnover than in the other departments. This may have been the case mainly because mathematicians had more opportunities to find another position (mathematics was taught both in technical universities and in universities). Also, these mathematicians mostly came to Brno from Graz, Prague and Vienna where they were born, had relatives and studied at local universities. Many of them, therefore, used the first opportunity to come back[21].

The first renowned mathematician teaching at the Brno Technical University Emanuel Czuber (1851–1925)[22], who came from the Prague German Technical University in 1886, is a good example of how Brno was used as the aforementioned springboard to Vienna. Czuber was a Czech from Prague (his original name, Čubr, was germanized during his studies at the German Technical University in Prague). In 1891, he left Brno for the Vienna Technical University.

In 1906, a brilliant period for mathematics opened at the German Technical University in Brno, which was probably directly linked with the position obtained by Georg Hamel (1877–1954) in 1905 after Hellmer's retirement. This was the first post the 28 year-old Hamel received after his doctorate thesis under Hilbert in Göttingen (about Hilbert's fourth problem) and his habilitation in Karlsruhe. Hamel's presence and unprecedented activity (in particular for recruiting the first rate collaborators) seems to have boosted the mathematical life in Brno from 1905 as is testified by the sudden appearance of a Brno seminar in the journal of the German mathematical society (*Deutsche Mathematiker–Vereinigung, DMV*). In the Czech lands at the end of the 19th century two mathematical unions coexisted. There was the German Union of

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[20]Jordán, F. : Dějiny university v Brně. Universita J. E. Purkyně v Brně. Brno 1969. p. 105.

[21]Šišma, P. : Matematika na německé technice v Brně. Prometheus, Praha 2002.

[22]Dolezal, E. : Emanuel Czuber. Jahresbericht der Deutschen Mathematiker–Vereinigung. 37, 1928, pp. 287–297.

Mathematicians (*Deutsche Mathematiker–Vereinigung*), as everywhere in the German cultural sphere. In 1862, moreover, a Czech counterpart, the Union of Czech Mathematicians and Physicists (*Jednota českých matematiků a fyziků*) was founded in Prague by students. Though this *Jednota* was initially intended as an organization devoted to the improvement of the students scientific knowledge, and teaching and lecturing skills without consideration for the language or the ethnic question, the more active Czech members rapidly transformed it into a Czech organization, isolating Czech students from the German ones and losing contact with the German teachers. The *Jednota* became one of the organizations of national consciousness of the Czech intelligentsia. Though there were members of this society in many places of Bohemia and Moravia, the meetings and lectures were officially held only in Prague till WW1[23].

The 1907 of the JDMV issue[24] mentions that in Fall 1905 a mathematico-physical society (*Matematisch-Physikalisch Gesellschaft*) was created in Brno and that during the academic year 1906-07 a seminar was held with a regular frequency of one talk every two weeks (16 talks that year). Hamel himself read four talks, Waelsch, the other full professor of mathematics in Brno, two, and among the other speakers we find the names of M.Ungar, R. von Mises, E.Fischer, E.Fanta. . . The full list of the talks between 1906 and 1913 published by the JMDV reveals 63 talks in which other names such as Hahn, Haas, Haar, Rückle, Ehrenfest, Tietze, Radon appear, some of them several times. An interesting comparison can be made with the situation of the mathematical society in Vienna as can be seen in the journal of the DMV. Speakers in Brno were often also speakers in the imperial capital the very same year. Tietze, Schrutka, von Mises, Hamel came several times to Vienna to speak while they held a position in Brno, and the mathematical department of the Brno German Technical University appeared as a kind of distant suburban university of Vienna. One may, however, feel a nuance when comparing the titles of the talks in the two cities. While the Vienna seminar concentrated on strictly mathematical aspects, Brno was slightly more oriented towards mechanics and mathematical physics (with talks about the Planck's results (Hamel), hydrodynamic (von Mises), electromagnetism (Jaumann), gravitation (Jaumann). . .) though Radon, Tietze, Fischer and others were also presenting purely mathematical results. We can also observe that personal relationships had certainly played a great role in the mathematical seminar in Brno. Several mathematicians from the list had met when they had been students in Göttingen (Hamel, Fanta and Haar for example). Hahn, Tietze and Ehrenfest had formed a small inseparable group of students at the Vienna University. They were in fact four in that group to which Gustav Herglotz[25] also belonged. After Hamel's departure to Aachen in 1912, the life

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[23]See details on the Union of Czech mathematicians and physicists in Seidlerová, I. : Science in a bilingual country in Bohemia in History. Mikuláš Teich, ed., Cambridge University Press, 1998.

[24]*Jahresbericht der Deutschen Mathematiker–Vereinigung.* 16 1907, pp. 396–397; 18 1909, pp. 104–105; 21 1912, pp. 58–59; 23 1914, pp. 52–53.

[25]Details about Herglotz and Ehrenfest can be found in a recent paper by Huijnen, P. and Kox, A. J. : Paul Ehrenfest's Rough Road to Leiden : A Physicist's search for a Position

of the Gesellschaft, though less active, continued until the beginning of WW1.

2.2 Czech institutions

At the Brno Czech Technical University, several mathematicians were appointed. Among the first members of the professors' staff we find Karel Zahradník (1848–1916) (who became the first rector) and Jan Sobotka (1862-1931). Zahradník had studied mathematics and physics at the Prague University, then he became a secondary school teacher in Prague and an assistant at the Prague Czech Technical University. In 1876 he was appointed Professor of mathematics at the University of Zagreb in Croatia.

As a typical feature, no mathematician or physicist from the Czech Technical University lectured in the German Mathematical Society. Until 1860s, the mathematicians at universities in Prague and Olomouc were Czechs or Germans born in the Czech lands, or mathematicians who came to the Czech lands from abroad. They wrote their theses and scientific works in German. They were mathematicians working in Bohemia or Moravia and nobody minded whether they were Czechs or Germans. The situation changed only in the last quarter of the 19th century, during the time of national revival[26]. Students from the Prague Technical University called for lectures in Czech. In 1860s the first professors for mathematical lectures in Czech were appointed and the mathematical community was divided for the first time. In 1869, the Prague Polytechnicum was divided into two schools and similarly at the beginning of 1880s, the venerable Charles University of Prague was split. German mathematicians from the Czech lands kept tight contacts with mathematicians in Germany and Austria and were considered as German mathematicians in Europe[27].

The Czech mathematicians, though more isolated, were also in contact with European mathematicians. They studied at universities in Germany, France or Italy. Their studies generally meant only short, one-year stays after they had graduated. Notwithstanding this had also been the tradition of German mathematicians from Prague, the mission of Czech mathematicians was new and different as they had to prepare the first Czech textbooks of mathematics

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1904-1912, Physics in Perspective, 9,2, 186-211, 2007. The same paper presents an interesting description of Ehrenfest's travel when he decided to leave St Petersburg in 1912 and to look for a possible permanent position somewhere in Europe. His talk in Brno in February 1912 belongs to this period.

[26]Nový, L. : Dějiny exaktních věd v českých zemích do konce 19. století. Nakladatelství Československé akademie věd, Praha 1961, p. 221.

[27]As Seidlerová observes in Seidlerová, I. : Science in a bilingual country in *Bohemia in History*, the situation continued after the independence of Czechoslovakia and even inside the country. She writes : *Even Czech university teachers and researchers often had no idea that in their works they actually cited a colleague from the Brno German Technical University.* We besides already described in Havlová, V., Mazliak, L. and Šišma, P. : Le début des relations mathématiques franco-tchécoslovaques vu à travers la correspondance Fréchet-Hostinský the amazing case of F.Urban, a Brno German mathematician who wrote a book in 1923 where he studied random events in chains (Markov chains, in modern terms) at precisely the same time when Hostinský became interested in them and who became known to Hostinský through Fréchet.

not only for university students, but also for secondary school pupils. While Czech mathematicians wrote textbooks devoted to general mathematics, German mathematicians could prepare textbooks for specialized mathematical disciplines and present their scientific results there. At the end of 19th century, the mathematicians, graduating at Czech universities, had a very small chance to be appointed professors in Austria or Germany. Their biggest hope was to be appointed in one of the two Czech universities in Prague. Thus Czech mathematicians mostly worked at secondary schools and their conditions for scientific work were very limited.

In 1897, Jan Sobotka was appointed Professor of Descriptive geometry at the Vienna Technical University. Sobotka had studied in a German real-school in Prague. He subsequently specialized in mathematics and descriptive geometry at both Czech universities in Prague. He became an assistant at the Czech Technical University where he replaced Tilšer for lectures of descriptive geometry. During this period, he attended seminars of leading German geometers in Zurich and Breslau. As he could not obtain a position of teacher even at a secondary school in Prague, he went to Vienna, where he became a secondary school teacher at a real-school for a short time. Soon he was appointed extraordinary Professor of descriptive geometry at the Vienna Technical University. In 1899 he was appointed Professor in Brno but in 1904 he went to Prague where he received a position of Professor of Geometry at the Prague Czech University. The majority of Czech mathematicians of the first half of 20th century learnt geometry under his direction[28].

Another Professor of mathematics at the Brno Czech Technical University was Antonín Sucharda (1854-1907), a former teacher in a real-school in Prague. He was also an assistant of descriptive geometry at the Prague Czech Technical University but he could not obtain a position at universities. He studied in Göttingen, Munich, Paris, and Straßburg. Sucharda worked in Brno only until 1904 when he fell ill. During the first years of the Brno Czech Technical University, Václav Řehořovský (1849–1911) came to Brno and was appointed Professor of mechanics. He had been an assistant of mathematics at the Prague Czech Technical University and then a teacher at secondary schools.

As we can see, the foundation of the Czech Technical University in Brno resulted in creating four professorships for the Czech mathematical community. For two of them, not young secondary school teachers, it was an opportunity to obtain better conditions for their scientific work. For Zahradník and Sobotka, it was a chance to return to their country. In 1906, after Sucharda's retirement, Matyáš Lerch (1860–1922) replaced him.

Lerch was a brilliant number theorist who had been appointed Professor at the University of Fribourg, Switzerland in 1896. Lerch had been supported by the French mathematician Charles Hermite to obtain this position because Lerch's chances to be appointed in Prague were minimal. Lerch had studied mathematics at the Prague University and Technical University where he was

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[28]Urban, A., Vančura, Z. : Sté výročí narození profesora Sobotky. Časopis pro pěstování matematiky. 87, 1962, pp. 382–386.

asked to become an assistant to Eduard Weyr in 1885 and later to Gabriel Blažek. He habilitated at the Prague Technical University in 1886 and during the next ten years published more than one hundred mathematical works[29]. During his stay in Fribourg Lerch tried, without success, to obtain a position at the Prague Czech University after the deaths of Studnička and Weyr and appears as a good example of a first-rate mathematician specialist who could not find any position in Czech universities as only two of them existed. In 1906, Lerch was appointed Professor of Mathematics at the Brno Czech Technical University, but his lectures seemed to have been more suitable for mathematical students than for future engineers. Lerch's assistant and successor Karel Čupr wrote in Lerch's obituary[30] that Lerch's lectures in Brno were the same as the ones he had read at the University in Fribourg. There were even public protests of the Technical University students against Lerch.

Eventually, with the choice of Miloslav Pelíšek (1855-1940) as Professor of descriptive geometry in 1908, the staff situation in mathematics became stabilized[31].

The foundation of the second Czech Technical University also brought changes into the organization of the *Jednota*. The Brno section of *Jednota* was officially founded in 1913 but the members had started organizing lectures and meetings immediately after the establishment of the Brno Czech Technical University. During the years 1901–1911 about 55 lectures were held in Brno. The auditors were mostly Brno secondary school teachers of mathematics[32].

3 Mathematics in Brno after WW1

As seen from the previous picture, though there has been a mathematical life in Brno in the years preceding WW1, it was completely split between the two national communities, as was the case in political questions. We were not able to find a single example of mathematical cooperation not only between a German and a Czech university at an official level (such as exchange of professors, common lectures and so on) but even between two individual members of these universities!

The mathematical life in Brno became paralyzed by the beginning of WW1. The activity of German mathematical society at the German Technical University stopped immediately. After Hamel's departure from Brno, the professorship of theoretical mechanics remained vacant until 1916. Both Professors of mathematics - Lothar Schrutka (1881–1945) as well as Heinrich Tietze (1880–1964) - were enlisted in the army. Tietze was an officer in the front, Schrutka taught at

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[29]Frank, L. : O životě profesora Matyáše Lercha. Časopis pro pěstování matematiky. 78, 1953, pp. 119–137.

[30]Čupr, K. : Profesor Matyáš Lerch. Časopis pro pěstování matematiky a fysiky. 52, 1923, p. 309.

[31]Franěk, O. : Dějiny České vysoké školy technické v Brně. Vol. 1, Vysoké učení technické v Brně, Brno 1969. pp. 233–240.

[32]Košťál, R. : Vznik a vývoj pobočky JČMF v Brně. Jednota československých matematiků a fyziků. Brno 1967. pp. 18–21.

a secondary military school in Vienna. From the German Technical University in Brno 9 professors, 10 docents, 40 assistants, and 34 others employees were enlisted[33]. All mathematical lectures and lessons were read by the Professor of descriptive geometry Emil Waelsch (1863–1927). Both his assistants were enlisted and they were replaced by students. Waelsch's assistants Wilhelm Schmid (1888–1963) and Rudolf Kreutzinger (1886–1959) were imprisoned in Russia and returned to Brno only in 1920 and 1921 respectively - which resulted in a difficult situation for descriptive geometry teaching immediately after the war, when the number of students increased. The number of students decreased from 950 before the war to 100-200 during the war.

Paradoxically, the situation of teaching at the Czech Technical University was better during the first years of the war because all the professors of mathematics and descriptive geometry (Zahradník, Lerch, and Pelíšek) were old men, and therefore not enlisted in the army. Zahradník died in 1916 and his successor, Jan Vojtěch (1879–1953), was appointed only in 1918. From 177 teachers and employees of the Czech Technical University in Brno, 64 persons were enlisted[34]. The number of regular students at the school decreased from 571 in the academic year 1913/14 to 254 in the academic year 1914/15 and there were approximately 90 students in 1916/17[35]. The remaining students of these empty years were often younger than before the war and belonged to the classes not yet called to the army. In 1913/14, there were 30% to be under 19 years old, while in 1914/15 the same category represented 49% of the students. In 1917, a certain number of soldiers were allowed to come back to universities, and the number of students increased to 368 : many of them were students having passed their first year examinations in 1914/15 and they were now enrolled in their second year.

The establishment of Czechoslovakia brought a turn in the position of Brno technical universities. The financial situation of universities had become critical and several buildings of both Brno universities had been used as military hospitals. The damage in these buildings made the restart of teaching in 1918 more difficult[36].

Being at a loss because of their new position of political inferiority, the leaders of German universities often made alarming declarations. It is true that as Germans boycotted the Czechoslovak National Assembly of 1919 (which resulted not from elections but from a common agreement of Czech and Slovak leaders)[37], the Czech majority was at ease to ask for a tight control of the

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[33]Haussner, A. : Geschichte der Deutschen Technischen Hochschule in Brünn 1849–1924. In Festschrift der Deutschen Technischen Hochschule in Brünn zur Feier ihres fünfundsiebzigjährigen Bestandes im Mai 1924. Verlag der Deutschen Technischen Hochschule, Brünn 1924. pp. 35–36.

[34]Franěk, O. : Dějiny České vysoké školy technické v Brně. Vol. 1, Vysoké učení technické v Brně, Brno 1969. p. 103.

[35]Archives of the Czech Technical University, Brno. Lists of students of academic years 1913/14 to 1919/20.

[36]Šišma, P. : Matematika na německé technice v Brně. Prometheus, Praha 2002. pp. 146–148.

[37]The first general election was held in 1920, and 72 German deputies were elected (that is,

German institutions. While the Czechoslovakian parliament was discussing the organization of higher education in the new state, a professor in the Prague German University declared : *We are in an appalling situation that a great part of our university would be thrown out onto the street. The situation is distressing and is best expressed by the words : homeless, without means, without rights*[38].

In the same session of the Parliament on 27 February 1919, Srdínko, who was a deputy at the Parliament then, contested the honesty of such declarations and claimed for a substantial reevaluation of the public means to the Czech and German universities. To support his assertion, Srdínko mentioned that even before the war, texts had been published by foreign authors to condemn the disproportion of means between the German and Czech universities. He quoted a paper in the Revue Générale from 1911 where one mentions that *a brutal and obvious fact appears from this amount of documents. It is the extraordinary disproportion existing between the credits attributed to the German University and those attributed to the Czech University, if one takes into account the respective populations.*[39]

The discussions at the Czechoslovakian Parliament in the years 1919-1920 were opportunities to present an avalanche of figures aiming at proving that the German universities received satisfactory funding from the Government and had no reasons to complain. Considering the example of the Brno (German) Technical University, Mareš mentions[40] that its budget in the Austrian times was 707 thousand crowns, while it was 1753 thousand crowns in 1919. It is of course difficult to precise the exact meaning of such figures as the war had considerably shaken the exchange rates. At the beginning of the war, in order to make it popular, the Austro-Hungarian government in Vienna had decided to pay double price for the main articles of necessity (grain, cattle, horses...) : an enormous amount of 30 billions Crowns had been printed by the Austro-Hungarian bank with forced rate during the war, resulting in a huge inflation[41]. The estimated inflation index rate for the crown in the Czech lands in October 1918 was 1876 (100 in 1914)[42].

The situation at the German Technical University in Brno was therefore more complicated than at the Czech Technical University after WW1. We have seen that before the war, a lot of teachers had come to Brno from Austrian universities. These often young men, had not seen real differences between

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deputies who belonged to a party whose name included the word 'German').

[38] *Co to znamená? To znamená, že akademický senát německé university v Praze neuznal právní stav tohoto státu, poněvadž připouští možnost, že by ta universita mohla býti přenesena do státu cizího, že tedy německá universita v Praze není, abych tak řekl, majetkem nebo statkem Československé republiky.* Quoted in Parliament Discussion, 27 February 1919 34th Session.

[39] Un fait brutal, évident, se dégage de cette masse des documents. C'est l'extraordinaire disproportion, qui existe entre les crédits affectés à ľ'Université allemande et ceux qui sont affectés à ľ'Université tchèque, si ľ'on tient compte de leur population respective.

[40] Parliament Discussion, February 27th, 1919 34th Session.

[41] Rašín, A. : Financial policy of Czechoslovakia during the first year of its history, Humphrey Milford, Oxford, 1923, p. 23.

[42] Šedivý, I. : Češi, české země a velká válka 1914–1918, Nakladatelství Lidové Noviny, p. 245.

positions in Graz, Brno or Innsbruck, and Brno was certainly a more attractive town for them than Lemberg or Czernovitz. After WW1, the situation changed and the Technical University in Brno, though it remained an institution intended for a minority, but now a minority without political power, became therefore much less attractive. The number of students was twice greater than before the war at the German Technical University in school year 1920/21, but the future of the German Technical University was obscure. Following the independence declaration of Czechoslovakia on 29 October 1918 the German deputies from Bohemia and Moravia in Vienna had proposed the future annexation of the regions with German settlement to Germany (north Bohemia and Silesia) or Austria (south Bohemia and south Moravia). The Czechoslovakian Government solved the problem by sending its army there from the end of November 1918. In March 1919, a violent repression against the Sudete Germans temporarily concluded the question and the German inhabitants resigned to belong to the Czechoslovakian state[43].

The existence of two German technical universities for the German minority was nevertheless a political problem because the Czechs soon drew attention to the fact that three million Germans had the same number of technical universities as nine million Czechs and Slovaks. The Czechoslovak government chose, however, to avoid a crisis, and a statu quo decision was quickly made. In March 1919, the professors of the Brno German Technical University took a vow of loyalty to the Czechoslovak Republic[44].

During this hectic period of difficult political situation, Austrian universities worried about the destiny of their 'sister-institutions' in the Czech lands. On December 14th, 1918 a meeting of Austrian universities was organized in Vienna to discuss a possibility of a common future. The representatives of the Prague German University asserted that it would be impossible to continue their activity in Prague, and proposed to move to a town in Bohemia where German settlement was in majority[45]. At the same time the Association of Austrian German Ingenieurs proposed to transfer the Prague German Technical University to Ústi-nad-Labem in the north of Bohemia and to officially transform Brno (German) Technical University into a branch of Vienna Technical University[46]. On December 23rd, 1918 the Academic Senate of the Prague German University declared that if the regions with German settlement obtained their reunion with Germany or Austria, the Prague University should also transfer. This declaration infuriated deputy Mareš expressed his anger about that point : *What does that mean? It means that the Academic Senate of the German University in Prague does not acknowledge the legality of this country [and acts] as if the German University in Prague were not a property of the Czechoslovakian*

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[43]Bělina, P., Čornej, P. et Pokorný, J. : Histoire des Pays Tchèques, Points-Histoire, Seuil, 1993.

[44]Archive of the German Technical University in Brno, Moravian Provincial Archive, B 34, 416.

[45]Quoted in Czechoslovak Parliament Discussion, February 27th, 1919 34th Session.

[46]Lidové Noviny, January 29th, 1919.

Republic[47].

The complicated situation at the Brno German Technical University resulted in many changes in the local mathematical community. In 1919, the professor of mathematics Heinrich Tietze left for Erlangen University and Ernst Fanta, an actuarial from Vienna, stopped his lectures of actuarial mathematics in Brno where he had come every week until that moment. It is possible that other docents from Vienna who had also worked at the Brno Technical University before the war, stopped commuting. The position of Professor of mathematics remained vacant until 1923, when Karl Mayr (1884–1940) was appointed. Eight mathematicians applied for this place in 1919 and the professors staff chose Johann Radon as the best candidate. Unfortunately, Radon had accepted an offer to become professor at Hamburg University in the meantime. The second possible candidate for the professorship in Brno, Roland Weitzenböck, had already been appointed at the Prague German Technical University. The negotiation continued in 1921 until the rector of the Brno Technical University suggested a professor of mathematics at the Clausthal Mining Academy, Horst von Sanden. Sanden rejected the offer, and so did Robert König (1885–1979) and Georg Prange (1885–1941) in 1922. Eventually Karl Mayr, an assistant of mathematics in Brno before WW1 became a privatdocent at the Vienna Technical University and Tietze's successor. But that lasted for a short time. Mayr, dissatisfied with his position of extraordinary professor in Brno, left the town for the Graz Technical University in 1924 (though in Graz he was offered the same status of extraordinary Professor)[48].

In 1925, Lothar Schrutka left Brno after having accepted professorship at the Vienna Technical University. The long negotiations about Mayr's and Schrutka's successors were again difficult. In 1925, Rudolf Weyrich (1894–1971), a student of Breslau University and a privatdocent in Marburg, was appointed extraordinary Professor and in 1927, Lothar Koschmieder (1890–1974) came to Brno as an ordinary Professor[49]. The discussions about the positions of professors at the Brno German Technical University were extremely slow. The very bad exchange rate of the Czechoslovak crown promised only very small salaries in comparison with their equivalent in Austria or Germany. In 1927, Josef Krames (1897–1986), a Professor of descriptive geometry at the German Technical University in Brno from 1927 to 1929, wrote to the Czechoslovak Ministry of Education, that his future salary in Brno would be the same as his salary of an assistant in Vienna[50]. He nevertheless accepted the position, because he rightly hoped that the status of extraordinary Professor in Brno would help him to obtain the professorship of descriptive geometry at the Graz Technical University. This happened in 1929.

Another factor delaying the negotiations was the fact that the Czechoslovak

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[47]Parliament Discussion, February 27th, 1919 34th Session.

[48]Šišma, P. : Matematika na německé technice v Brně. Prometheus, Praha 2002. pp. 216–219.

[49]Šišma, P. : Matematika na německé technice v Brně. Prometheus, Praha 2002. pp. 220–225.

[50]Czech National Archive in Prague, Ministry of Education, Josef Krames — personal file.

government obstinately refused foreign candidates to be chosen. The Ministry of Education required exclusive proposals for Czechoslovak experts in Czechoslovak universities and only in some exceptional situations (when a native expert could not be found) might a foreign candidate be considered. As the German universities of Prague or Brno did not produce a sufficient number of specialists, able to compete with Austrian and German ones, they naturally turned towards foreign scholars and the discussions were complicated. Let us also add that after WW1 the mathematical life at the German Technical University in Brno obviously could not continue the traditions of the German Mathematical Society before the war. Only fundamental mathematical lectures for engineers remained at the Technical University and there were no more special lectures read by privatdocents of mathematics. The Professors of mathematics at the German universities in Czechoslovakia kept their contacts with mathematicians in Austria and Germany and did all they could to obtain positions at foreign universities. They regularly participated in the meetings of the *Deutsche Mathematische Vereinigung* and organized such a meeting in Prague in 1929. While in Prague we know about individual contacts between Czech and German mathematicians, in Brno these contacts seem to have been extremely rare.

Rather than a confrontation with the German community, the Czechoslovak government chose to make a priority of the future development of the Czech Technical University (as proven by the creation of the new Faculty of Architecture in 1919 after many years of requests). When the peace came back, the number of regular students at the Czech Technical University experienced a big jump to more than 900. Moreover, the Technical universities were opened to women after the war[51]. Due to the presence of the older classes, the age distribution was slightly different than before the war : in 1914 only 14% of the students were over 24 years old and they were 28% in 1919. Many of them were therefore in need of a rapid technical qualification to start working as the technicians of the new state, a situation not particularly favorable to mathematics. And indeed the number of professors of mathematics, descriptive geometry, and mechanics did not change at the Brno technical universities after WW1. After Lerch's departure to Masaryk University, Karel Čupr (1883-1956) was appointed his successor in 1923. Descriptive geometry was taught by Pelíšek until 1928. Another name to be mentioned, Jur Hronec (1881–1959) came to Brno in 1924[52].

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[51]Before 1919, women could study at technical universities only as extraordinary students. The admittance of any woman was discussed at the professors staff meetings. Though there were several attempts to open technical universities to women before the Great War, the Austrian Ministry of education remained always opposed to the idea.

[52]Hronec worked at the Technical University till 1938. He was the only Slovak professor of mathematics at Czechoslovak universities, illustrating the somehow problematic disparity between the two founding components of the multinational state. In 1939 Hronec was appointed Professor and the first rector of the first Slovak Technical University in Košice. Descriptive geometry was taught by Pelíšek at Brno Technical University till 1928 (see Franěk, O. : Dějiny České vysoké školy technické v Brně. Vol. 1, Vysoké učení technické v Brně, Brno 1969. pp. 233–240).

4 The foundation of Masaryk University

We now arrive at the main event in the academic life of Brno in the immediate afterwar period, the creation of an entirely new university. For the new government, the creation of high education institutions was not only a conclusion to the aforementioned fights for the rights of the Czech citizens. It was now a question of vital necessity to build such institutions in the south of the country because the traditional road to Vienna for Moravian and Slovak students was barred. Yet, before the collapse of the monarchy, Czech and Slovak leaders agreed on the necessity of creating two new universities, in Brno and in Bratislava. Not later than at the second session of the Czechoslovak Parliament on November 15th, 1918 a group of deputies proposed the creation of a university in Brno with three faculties : of philosophy, law and medicine. At the beginning of 1919, it was decided to divide the philosophical faculty into two faculties — philosophical and science as had been done in the Prague universities and the institution with four faculties called Masaryk University was founded by the Law of January 28th, 1919. Before the beginning of the first academic year, the first professors of each faculty were appointed. The lectures started at the Faculty of Law (a bit strangely only for the first and third years of study — perhaps because of the unusual age distribution already mentioned in case of the Czech Technical University) and at the Faculty of Medicine (the first two years of study) in the academic year 1919/20. The faculties of Science and Philosophy started their activities the following year. Among the first professors at the Faculty of Science we find the names of Bohuslav Hostinský (1884–1951), Matyáš Lerch or Bedřich Macků (1879–1929).

The new university had to solve many problems. The first task was the designation of the professors board. As may be expected, the main source of teachers for Masaryk University was the Prague Czech University and its privatdocents, including the mathematicians Bohuslav Hostinský and Ladislav Seifert (1883–1956).

Bohuslav Hostinský was the son of a very famous member of the Czech intelligentsia, the musicologist Otakar Hostinský. In 1906, he defended a thesis in mathematics under the title *On Lie spherical Geometry*. For the academic year 1908-1909, Hostinský obtained a grant from the Ministry of Education for one-year stay in Paris. He followed lectures by Picard, Poincaré and Darboux there. His Parisian stay was a crucial moment for his scientific evolution and allowed him to prepare his habilitation. Back in Prague Hostinský became again a Gymnasium teacher in 1909-10 and then, from 1910, in the *Realschule* of Prague-Vršovice. This was his first permanent position, an important step for any teacher in the lands with the German schooling system. At the same time, he was finishing his habilitation which he defended on November 16th, 1911 under the title *On Geometric methods in the theory of functions*. In 1912, Hostinský was called to be privatdocent to the Prague University. In parallel with his secondary teaching, he began to give conferences on several themes of higher mathematics (theory of analytical functions, differential geometry of curves and surfaces, differential equations, geometric applications of differential

equations ...). For reasons we do not know (most probably health reasons), Hostinský was not enlisted during the war and remained in Prague. We have narrated how Hostinský discovered probability theory during the war in another paper[53]. Some months before his appointment in Brno, during the academic year 1919-1920, Hostinský taught Volterra's theory on integral equations and their applications[54]. We shall see in the next section how Hostinský played a major rôle for developing mathematics in Brno in the inter-wars period.

Ladislav Seifert was a privatdocent of the Prague University. In the academic year 1907/08 Seifert had studied at universities in Straßburg and Göttingen. Seifert wrote works devoted to algebraic geometry and differential geometry. His works dealt with surfaces of third order and quadrics of revolution. In differential geometry he studied the properties of some curves and surfaces and he interpreted his results in descriptive geometry. He was therefore an heir of the Czech geometers of the second half of 19th century and he was outside the main trends of the development of geometry of the 20th century[55]. In 1920, Seifert habilitated for mathematics at the Prague University and at the Technical University for descriptive and synthetic geometry and it was probably the urgent need for a teacher of geometry for the new Masaryk University that allowed Seifert to obtain the position of professor.

The main brain teaser for the new university was, however, the absence of rooms and buildings. All the faculties started their teaching in temporary conditions, some rooms were rented from the Technical University or other organizations. The first mathematical lectures by Lerch were held in a room where he had taught his students of the Technical University before. A huge plan for developing an academic quarter near the building of the Technical University was not realized, and in fact only one building of that quarter was built — the Faculty of Law[56]. The other faculties were located in different parts of the town. The situation did not really change until today. A larger campus is nowadays being constructed.

Masaryk University had to build its own libraries for faculties or departments. Bohuslav Hostinský was the zealous head of the library commission of the Faculty of Science and managed to obtain the inheritance of several personal libraries to create scientific libraries in Brno.

Hostinský spent also a lot of energy founding a journal of the Brno Faculty of Science *Spisy vydávané přírodovědeckou fakultou Masarykovy university.* Hostinský (as we shall see in the next section) managed to obtain many exchange agreements with hundreds of scientific institutions from the whole world. This appeared to be a decisive point for the new university as, on the score of the

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[53]Havlová, V., Mazliak, L., Šišma, P. : Le début des relations mathématiques franco-tchécoslovaques vu à travers la correspondance Fréchet Hostinský, Jehps, 1,1. 2005.

[54]Beránek, J. : Bohuslav Hostinský (1884–1951). Časopis pro pěstování matematiky. 109, 1984, pp. 442–448.

[55]On Seifert, see Hrdličková, J. : Život a dílo Ladislava Seiferta (1883–1956). Thesis. Masaryk University, 2001. About the Czech geometric school, see the contribution by Folta in L'Europe Mathématique, C.Goldstein, J.Gray and J.Ritter, Edrs, Maison des Sciences de l'Homme, Paris, 1996.

[56]It is today the building where the archives of the university are located.

very bad exchange rate of the Czech crown, the foreign journals were unaffordable. Thanks to the exchange, it could be declared in 1937 that the department of mathematics bought only six journals, and obtained one hundred through exchanges[57]. Moreover, the creation of this new journal became a good opportunity not only for the faculty members but also for all Czechoslovak scientists to disseminate their results. The issues were published as separate numbers. In 1925, there had already been about fifty of them.

In the new Faculty of Science, there were two professorships for mathematics and two for physics. Matyáš Lerch and Ladislav Seifert were appointed the first Professors of mathematics. Seifert was appointed Professor of geometry, Lerch taught mathematical analysis and algebra. Bohuslav Hostinský, a privatdocent at the Prague University, was appointed Professor of theoretical physics, and Bedřich Macků, who had been extraordinary Professor of physics at the Czech Technical University in Brno, was appointed Professor of experimental physics.

The creation of Masaryk University enabled Lerch to transfer and to give lectures for mathematicians, especially secondary school teachers. In 1920, Lerch shared with Hostinský the teaching of all mathematical and physical lectures and officially started the development of the mathematical department. Nevertheless, as Lerch was ill and tired, his actions were restricted and he mostly limited himself to teaching. His main contribution may be to have noticed the talented student Otakar Borůvka (1899–1995) whom he managed to appoint the first assistant of mathematics at Masaryk University. Borůvka then became the leader of Brno mathematics in the second half of 20th century. In August 1922, Lerch died. Seifert became the head of the mathematical department and Eduard Čech (1893–1960) was appointed in 1923 only one year after his habilitation. Čech had studied mathematics and descriptive geometry at the Prague University from 1912. He was enlisted during the war, but, for reasons unknown to us, was not sent to the front. He served as a clerk in the rear for three years, having time for reading mathematical books and learning foreign languages (Italian, German, and Russian). After the war he started to teach in a secondary school in Prague. In 1920 he defended a thesis on differential geometry. He spent the academic year 1921/22 in Torino under the direction of G. Fubini. Back in Prague, he received the habilitation degree at the Prague University in 1922 and a year later he was appointed extraordinary Professor in Brno. He was a geometer but he taught mathematical analysis and algebra. In 1928 he was appointed full Professor and became one of the world best specialist in topology during the 1930s[58].

5   An axis Brno-Strasbourg : dreams and reality

Once Masaryk University settled down, it appeared necessary for it to participate in international scientific programs. More than an academic need, this was

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[57]Čech, E. : O reorganizaci naší vědy. Naše věda. 18, 1937.

[58]Katětov, M., Novák, J., Švec, A. : Akademik Eduard Čech. Časopis pro pěstování matematiky. 85, 1960, pp. 477–491.

clearly a strong political symbol of the scientific presence of the new Czechoslovakia.

In the mathematical science, a very interesting example of efforts to establish scientific relationships linked with the new political map of Europe is given by the contacts between Maurice Fréchet (1878-1973) in Strasbourg and Bohuslav Hostinský in Brno. We shall explain how these effort found a basis in the international situation of the time. This situation was the conjugation of several aspects : the eagerness of the allies (mostly of the continental ally, France[59]) to consolidate its alliance with the new countries of Central Europe to thwart a possible future German awakening; the aspirations of Czechoslovakia to be more present on the international stage; the anxiety of Germany to keep tight links with its former natural sphere of influence.

France probably wanted to make an emblem from its relationship with Czechoslovakia. A singular fact is that very soon in the French official rhetoric appeared a comparison between Czechoslovakia and Alsace, two countries presented as having been rescued from the jaws of German imperialism. This idea influenced all the domains of economical and cultural life, in particular academic life. In 1919, the new born Czechoslovakia seemed an excellent opportunity for the program of cultural exchanges that France wanted to organize after the war. The new top politicians (beginning by the emblematic Tomáš Masaryk and his second Eduard Beneš) had kept tight personal and intellectual contacts with France. An extremely active propaganda was organized by the French authorities to convince the Czech Government and the local administrations (universities, schools, cultural associations) of the importance of cultural and educational contacts. Two universities of Brno and Bratislava, newly created in 1919, were objects of a special attention.

After the war, the traditional competition between Germany and France to attract students and scholars from foreign countries had encountered a new development. Victorious France had now a position of conqueror (and the officials often showed an amazing self-confidence on the subject), while Germany was on a defensive line. As soon as in 1918, a German scientist, Rieser, wrote in *Akademische Rundschau* that, if the Germans do not provide the necessary efforts to attract foreign students *afterwards, Russians and Japanese will go to French schools which are not worse than the German ones, and will come back home and spread the French spirit* [60].

Almost immediately after the end of the war, the reconquest of the university of Strasbourg, and its reconstruction along French standards appeared an urgent task to the French Government. An interesting sign is given in Lavisse's speech (Lavisse was the Director of the Ecole Normale) to the students for the opening of Academic Year 1919-1920 at the Ecole Normale Supérieure in Paris : *You will be soldiers again, and you will serve with honour in the French intellectual army whose center is in Paris, and its advanced guard in Strasbourg.*

Let us immediately observe that the fact that Strasbourg had strong links

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[59]On the French politics towards central Europe, see Wandycz, P. S. : France and its Eastern Allies 1919-1925, Minneapolis University Press, 1962.

[60]Akademische Rundschau, V, 1918, p.322.

with German culture was not an obvious advantage in the eyes of foreign students from the former lands of the central Empires as the French authorities had first thought. A French diplomat in Transylvania (a part of the Austro-Hungarian Empire given to Rumania) who also tried to attract students to Strasbourg writes to the Dean of Strasbourg university in June 1920 :

> For many people here, and among the most francophile, the Alsacian remains a hybrid person, German as much as French, and who, condemned to live on one of the two sides, finally prefers France where his life is more comfortable. [The local academic persons responsible] fear that in Strasbourg one cannot breathe an absolutely pure French air. You certainly recognize therein the effect of the Fritz propaganda on the mind of these brave Transylvanians.[61]

Nevertheless, the French government lived in hopes of attracting many foreign students from eastern Europe to Strasbourg and wanted the university to become a display of the successes of French science. The following letter from a French deputy to the administrator of Alsace, dated from March 1919, is a good illustration.

> You know better than anyone the considerable importance that the Germans had given to this university and the coquettishness they showed to make of it one of the most brilliant, if not the most brilliant, of the whole empire. You certainly have read that going away they predicted that in less than 3 years France would have jeopardized their work. How can we face this challenge[62]?

Strasbourg, therefore, became a first rank university in France for ten years, and a place of original scientific experiments. It is in Strasbourg that French scientists, who faced the experience of the war organization (especially the direction of inventions for national defense where Borel had played a major role) understood the importance of developing statistics. During the imperial period, Straßburg had indeed been a major place of the discipline, with Lexis and Knapp[63]. Among the pedagogical initiatives where the teaching of statistics was of prime importance, there was the creation of the Institute for Commercial studies (*Institut d'études commerciales*) where an original teaching was made by the sociologist Maurice Halbwachs and Fréchet.

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[61]Pour beaucoup de gens ici, et des plus francophiles, l'Alsacien demeure un être hybride, autant allemand que français, et qui, réduit à vivre dans l'un des deux camps, préfère en définitive celui de la France où on lui fait la vie plus douce.J'ai senti [qu'ils craignent] qu'on ne respire pas à Strasbourg 'un air de France absolument pur'. Vous reconnaissez là, bien certainement, Monsieur le Doyen, les effets de la propagande boche sur l'esprit de ces braves transylvains.

[62]Vous savez mieux que personne l'importance considérable que les allemands avaient donnée à cette université et la coquetterie qu'ils ont mise à en faire une des plus brillantes sinon la plus brillante de l'empire. Vous avez certainement vu aussi qu'ils ont prédit en partant qu'en moins de 3 ans la France aurait saboté leur œuvre. Comment relever ce défi?

[63]On the development of mathematical statistics in France, see Catellier, R. and Mazliak, L. : Borel, IHP and the beginning of mathematical statistics in France after WW1. To appear.

Before being appointed to Strasbourg in 1919, Fréchet had been professor at Poitiers University between 1910 and 1914, and he had been already famous in the international mathematical community after having defended an outstanding thesis on the topology of functional spaces in 1906 in which he offered a theoretical framework for the use of Volterra's functions of lines. In addition to his mathematical fame, Fréchet had another asset : he was a polyglot. A singular fact of his life is the energy he devoted to the promotion of Esperanto : in particular, he wrote several mathematical papers in this language. He had an excellent knowledge of English, at a time when this was not usual. During the war, he served as an interpreter for the British army. He knew German well, a very useful thing in Strasbourg.

From the very beginning of his presence in Strasbourg, Fréchet had seriously taken the question of international relations of the university into consideration. On June 29th, 1919 he wrote the following letter to Prague :

> My dear colleague,
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> May I ask you to let me know which are the universities that should remain and which should be created on the territory of your new state. Moreover maybe one of your students would like to oblige by sending to me the list of professors of mathematics of the Czechoslovakian universities, as well as the list of Czechoslovakian journals printing original papers in mathematics written by your fellow countrymen mathematicians. Is any of these journals publishing in French?
>
> Will you excuse me, my dear colleague, for all these questions. Receive my most respectful regards.
>
> Maurice Fréchet

It is not clear precisely to whom Fréchet had written, but we know that after several months Sobotka asked Kössler to transmit the letter to Hostinský, who received it on October 19th, 1919. Hostinský was then the secretary of the National Provisory Comittee of Czechoslovakia[64], and this may explain why he was put in charge of answering Fréchet. As he had stayed in Paris for a while, he was also probably known for his good knowledge of French.

Hostinský answered to Fréchet on October 19th, 1919 from Prague (it had been a few weeks before he left for Brno). He informed Fréchet about the future opening of the universities in Brno and Bratislava, and specified that the Brno faculty of law would open soon, whereas it would be so in 1920 for the scientific disciplines. Hostinský also mentioned that the two most important journals, the *Časopis pro pěstování matematiky a fysiky* (Journal for the cultivation of mathematics and physics) and the *Věstník Královské české společnosti nauk* (Bulletin of the Royal Czech Science Society) would change soon their language policy and decided to increase the presence of French and English to the detriment of German. To conclude his letter, Hostinský did not forget to mention that he had been in Paris during the academic year 1908-09, and that he had studied

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[64]Bru, B. : Souvenirs de Bologne, *Jour. Soc. Fr. Stat*, 144, 135-226, 2003.

there with the jewel of French mathematics (Darboux, Poincaré, Picard, Humbert, Appell, Hadamard, Borel...). He proposed to Fréchet to become his main contact in Czechoslovakia in case of need.

Fréchet answered to this letter on November 12th, 1919, lavishing advice on Hostinský for collecting all French abstracts of all Czech publications in a single journal. One may feel in Fréchet's letter a slight touch of paternalism towards new developing communities. Fréchet was certainly conscious of the fact, as he cautiously wrote that he had thought *interesting to let [Hostinský] know the opinion of a stranger who seeks nothing but good things for Czech scientists and mathematical science*, and that collecting these abstracts would show *how large the part of Czech science was among what was usually attributed to the Germans in Austria.*

In a further letter dated June 1st, 1920, written on a heading paper of the Organization committee of the sixth International congress of Mathematicians, Fréchet enclosed a little brochure called *Teaching of mathematics at the University of Strasbourg* that had been printed in order to attract students in the Alsace capital, and asked Hostinský to include its publication in a Czech journal. Fréchet wrote that the Strasbourg *University needs to create new currents towards itself and for a while it will be necessary to make some propaganda.* Hostinský answered at the end of June. He hoped to meet Fréchet for the first time in Strasbourg, as he would be a member of the Czech delegation to the International Congress of Mathematicians held in the town in September 1920.

The Czech delegation was important (11 members, of the total of about 200 persons). In a report made after the congress[65], Bohumil Bydžovský (1880–1969) mentioned that

> the contact with mathematicians from the Strasbourg University, which is our main university partner in the West, was particularly cordial. The interest they showed for our scientific, educational and social situation seems to warrant that reciprocal exchanges will continue, obviously for the prosperity of our science.[66]

At Strasbourg congress where he indeed met Fréchet, Hostinský read two talks : one on differential geometry, the second one on mechanics. Moreover, during the spring of 1920, Hostinský had sent to Emile Picard the translation of his Czech paper, published in 1917 in *Rozpravy České Akademie*[67] and devoted to a new solution of Buffon needle problem. As soon as he received it (April 18th, 1920), Picard proposed to include the article into the Miscellaneaous section of the *Bulletin des Sciences Mathématiques*. This slightly modified version of the 1917 paper was published at the end of 1920[68] and Fréchet read it carefully,

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[65]Časopis pro pěstování matematiky a fysiky. 50, 1921, p. 46–47.

[66]Zvláště srdečný byl styk s matematiky Štrasburské university, naší nejbližší spřátelené vysoké školy na západě. Zájem, který jevili o naše poměry vědecké, studijní i jiné veřejné, zdá se býti zárukou, že ve vzájemných stycích bude pokračováno, jistě ve prospěch naší vědy.

[67]Hostinský, B. : Nové řešení Buffonovy úlohy o jehle. Rozpravy české akademie II. 26, 1917. p. 8.

[68]Hostinský, B. : Sur une nouvelle solution du problème de l'aiguille. Bulletin des Sciences Mathématiques. 44, 1920. pp. 126–136.

as he himself mentioned in a letter to Hostinský dated November 7th, 1920 congratulating the author for having obtained a *positive result*. This reading became an opportunity for Fréchet to write his first paper in probability theory, and at the same time for Hostinský the first step towards his studies on the ergodic principle.

The beginning of the correspondence with Hostinský was only one reason for Fréchet to become interested in probability and not the main one. His lectures at Strasbourg Commercial Institute together with Halbwachs clearly played a greater role. However, our guess is that it was the continuation of this correspondence which introduced him to a major probabilistic theme, Markov chains. Hostinský's decisive luck was indeed a submission he made to the Academy of Sciences in Paris in 1928. It was a note devoted to an elementary version of the ergodic theorem for a continuous state Markov chain. The matter was to meet a spectacular development in the 1930s and Hostinský preceded there all the future major specialists (Kolmogorov in the first place). The importance of the note did not escape Hadamard and marked for the French mathematician the only period of his long life devoted to probability theory, a period nicely referred to by Bru as Hadamard's *ergodic spring*, ended by the International Congress of Bologne (September 1928) where Hadamard read a lecture on card shuffling. Between February and June 1928, Hostinský and Hadamard exchanged a lot of letters, published several notes responding to one another and also met during Hadamard's journey to Czechoslovakia in May. From this moment, Hostinský acquired a real international prestige and in the 1930s his little school in Brno became an active research center around markovian phenomena. Until its collapse in the dramatic events of the German annexation of 1939 and World War 2, this little school of mathematical physics in Brno was one of the most successful creations of a mathematical center directly inherited from the new situation of postwar Europe.

The letters of the time with Fréchet prove how Hostinský presented all the developments of the subject to his French colleague. It is besides what Fréchet himself wrote in memoriam at Hostinský's death

> Among his so varied researches, he had succeeded in introducing me to the theory of probabilities in chain. Hence it is thanks to him that I could write the second volume of my studies on modern probability theory on the subject, and in the book I frequently used his ingenious methods[69].

[69]Parmi toutes ses recherches si variées, il avait su m'intéresser à la théorie des probabilités en chaîne. De sorte que c'est grâce à lui que j'ai été amené à écrire sur ce sujet le second livre de mes Recherches sur la théorie moderne des probabilités, ouvrage où j'ai eu à invoquer ses ingénieuses méthodes en de nombreux passages. . . (Fréchet to the Rector of Masaryk university on 5 May 1951).

Conclusion

The foundation of Czechoslovakia in 1918 appears a good example of an attempt of reorganization of Europe after the end of World War I. In places where there was a tense cohabitation of several national communities (as in many parts of the collapsed Austro-Hungarian empire), it was necessary to choose a form of organization allowing the coexistence of several traditions. This was in particular the case with the organization of educational system.

When one studies the local case of Brno, the capital of Moravia on the border of Austria, it is vital to understand how the difficult contacts between the Czech majority and the large German minority had influenced the whole process of edification of education institutions between ca 1880 and 1930. Though the German minority lost its domination in 1918, the institutions were still much influenced by the culture that had prevailed before the war, though there were several attempts to create a new interest towards the countries of the victorious side.

Considering the case of mathematics, we tried to expose how the discipline was mainly active in the German Technical University before the war with the creation of a local German Mathematical Society when Hamel was given a position of full professor of Mechanics, and in the new Masaryk University after the war where we emphasized the important role of Hostinský and his international contacts, especially with France. However, despite political changes unsolved contradictions, antagonisms and absence of communication continued to exist between the two communities.